Attorney Docket No.: 2005P00312WOUS

UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	Guenter Ries
Application Number:	10/591,086
Filing Date:	08/29/2006
Group Art Unit:	2832
Examiner:	Ramon M. Barrera
Title:	LINEAR DRIVE DEVICE WITH A MAGNET YOKE BODY AND A PERMANENT MAGNETIC ARMATURE

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

Pursuant to 37 CFR 1.192, Appellants hereby file an appeal brief in the above-identified application. This Appeal Brief is accompanied by the requisite fee set forth in 37 CFR 1.17(f).

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(1) REAL PARTY IN INTEREST

The real party in interest is BSH Bosch und Siemens Hausgeräte GmbH.

(2) RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) STATUS OF CLAIMS

Claims 14-31 are pending in the present application. Claims 1-13 were canceled. Claims 22-31 are allowed. Claims 14-21 stand finally rejected. The final rejections of claims 14-21 are being appealed. Claims 14 and 22 are independent.

(4) STATUS OF AMENDMENTS

There are no outstanding Amendments.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

An exemplary embodiment of the present invention, as recited by, for example, independent claim 14, is directed to a linear drive device (2) ([001], page 1, line 6; [007], page 2, lines 13-14; [009], page 2, lines 23-25; [010], page 2, lines 27-29; [011], page 3, lines 7-11; [015], page 4, lies 1-2; [016], page 4, line 19; [024], page 4, lines 30-33, and page 5, lines 1-4; [0278], page 6, lines 1-5; [037], page 6, lines 24-25; [038], page 7, lines 6-8) that includes

an excitation winding (3) producing a variable magnetic field ([001], page 1, line 7; [009], page 2, lines 23-25; [010], page 2, lines 31-32; [014], page 3, lines 24-26; [024], page 5, lines 2-3, 12-14),

a magnetic-flux-guiding main yoke body (5, 16) accommodating the excitation winding (3) and having multiple limbs (5a-5c, 16a-16c) including a central limb ([008], page 2, lines 16-21; [010], page 2, lines 30-31; [011], page 3, lines 7-11; [014], page 3, lines 20-23; [020], page 4, line 23; [024], page 5, lines 2-4; [037], page 6, lines 25-26 and 29-31; [038], page 7, lines 6-7),

a winding-free counter-yoke body (6) disposed opposite to the main yoke body (5) ([001], page 1, lines 10-11; [011], page 3, lines 7-11; [015], page 4, lines 3-5; [019], page 4, line 21; [024], page 5, lines 4-11; [026], page 5, lines 28-30; [037], page 6, lines 25-26);

an axial gap (7) formed between the main yoke body (5, 16) and the counter-yoke body (6) ([001], page 1, lines 11-12; [024], page 5, lines 8-12; [037], page 6, lines 26-29),

an armature body (8) provided with at least two permanent magnetic magnet parts (9a, 9b) arranged axially one behind the other and having opposite magnetization (M) ([001], page 1, lines 15-16), each of the at least two magnet parts (9a, 9b) having a magnet axial extension dimension (d_{pm}), the armature body (8) being set in axially oscillating motion by the magnetic field of the excitation winding (3) in the axial gap (7) ([001], page 1, lines 17-18); [011], page 3, lines 9-11; [015], page 4, lines 3-5; [024], page 5, lines 8-18; 027], page 6, lines 2-5; [037], page 6, lines 26-29 and 31-32, and page 7, lines 1-4); [024], page 5, lines 8-18),

and

each of the multiple limbs (5a-5c, 16a-16c) of the main yoke body (5, 16) having a pole surface (F_p) facing the armature body (8) and defining a pole surface width dimension (b_j) extending across the axial width of the pole surface (F_p), the pole surface width dimension (b_j) of each of the multiple limbs (5a-5c, 16a-16c) being substantially the same, each of the multiple limbs (5a-5c, 16a-16c) being spaced apart from one another axially by a pole surface spacing dimension (b_w), the magnet axial extension dimension (b_{pm}) of each magnet part (9a, 9b) being approximately equal to the sum of the pole surface width dimension (b_j) and the pole surface spacing dimension (b_w) ([008], page 2, lines 17-21; [011], page 3, lines 9-11; [014], page 3, lines 26-30; [015], page 4, lines 6-8; ([025], page 5, lines 20-26); [027], page 6, lines 4-8; [037], page 6, lines 26-32, and page 7, lines 1-4).

Conventional yokes for linear drive devices have been kinked on a side facing the armature. Such conventional yokes are expensive to produce and it is difficult to arrange the windings in the windows of such conventional yokes.

In stark contrast, an exemplary embodiment of the present invention includes a pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width dimension and the pole surface spacing dimension.

In this manner, the yoke structure is greatly simplified.

Claim 15 depends from claim 14 and is directed to a drive device (2) further including winding windows (4) holding the excitation winding (3) between the limbs (16a-16c) and

having a window axial extension dimension (d_w) extending between the adjacent limbs (16a-16c), and pole shoe bodies (17a-17b) disposed on the pole surfaces (Fp) of the limbs (16a-16c) of the main yoke body (16) and having a pole axial extension dimension (d_j) being greater than the window axial extension dimension (d_w) ([027], page 6, lines 1-8).

Claim 16 depends from claim 15 and is directed to a drive device (2) wherein the pole shoe bodies (17a-17b) are placed on the respective limbs (16a-16c) ([027], page 6, lines 1-8).

Claim 17 depends from claim 14 and is directed to a drive device (2) wherein the counter-yoke body (6) includes counter limbs (6a-6c) having axial width dimensions at pole surfaces corresponding to the limbs of the main yoke body ([024], page 5, lies 6-8).

Claim 18 depends from claim 14 and is directed to a drive device (2) wherein the counter-yoke body (6) is embodied as plate-shaped ([026], page 5, lines 28-30).

Claim 19 depends from claim 14 and is directed to a drive device (2) wherein the pole surface width dimension (b_j) of at least one pole surface (F_p) is substantially the same as the stroke distance (H) of the armature body (8) during the oscillating movement ([015], page 4, lies 6-8; [024], page 5, lines 16-18; ([025], page 5, lines 20-26); [027], page 6, lines 1-8; [037], page 6, lines 29-32, and page 7, liens 1-6).

Claim 20 depends from claim 14 and is directed to a drive device (2) wherein the magnet parts (9a, 9b) are embodied as plate-shaped ([024], page 5, line 10).

Claim 21 depends from claim 14 and is directed to a drive device (2) wherein the armature body (8) is rigidly connected to a pump piston (11) of a compressor (V) ([024], page 5, lines 14-18).

As explained above, conventional yokes for linear drive devices have been kinked on a side facing the armature. Such conventional yokes are expensive to produce and it is difficult to arrange the windings in the windows of such conventional yokes.

In stark contrast, an exemplary embodiment of the present invention includes a pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width dimension and the pole surface spacing dimension.

In this manner, the yoke structure is greatly simplified.

(6) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

a. Whether claims 14 and 18-20 are unpatentable under 35 U.S.C. § 102(b) over the JP2000-253640 reference,

b. Whether claims 14 and 17-20 are unpatentable under 35 U.S.C. § 102(b) over the JP2000-224829 reference,

c. Whether claims 15 and 16 are unpatentable under 35 U.S.C. § 103(a) over the JP2000-253640 reference in view of the Huth reference (EP 0915553), and

d. Whether claim 21 is unpatentable under 35 U.S.C. § 103(a) over the JP2000-253640 reference in view of the McGill et al. reference (US 2003/017384).

(7) ARGUMENT

a. Claims 14 and 18-20 are patentable under 35 U.S.C. § 102(b) over the JP2000-253640 reference

The Office Action rejects claims 14 and 18-20 under 35 U.S.C. § 102(b) as allegedly being unpatentable over the JP2000-253640 reference. Appellant respectfully traverses this rejection.

Independent Claim 14 and Claim 19

None of the applied references teaches or suggests the features of the claimed invention including:

1) a pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width dimension and the pole surface spacing dimension as recited by independent claim 14; and

2) the pole surface width dimension of at least one pole surface is substantially the same as the stroke distance of the armature body during the oscillating movement as recited by claim 19.

As explained above, these features are important for simplifying the yoke structure and thereby making it less expensive to manufacture and easier to install the windings.

Indeed, the Office Action does not allege that the JP2000-253640 reference teaches or suggests the pole surface width dimension of at least one pole surface is substantially the same as the stroke distance of the armature body during the oscillating movement as recited by claim 19.

Appellants respectfully request reversal of this rejection.

b. Claims 14 and 17-20 under 35 U.S.C. § 102(b) as allegedly being unpatentable over the JP2000-224829 reference

The Office Action rejects claims 14 and 17-20 under 35 U.S.C. § 102(b) as allegedly being unpatentable over the JP2000-224829 reference. Appellant respectfully traverses this rejection.

Independent Claim 14 and Claim 17

None of the applied references teaches or suggests the features of the claimed invention including:

1) a pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width

dimension and the pole surface spacing dimension as recited by independent claim 14; and

2) the counter-yoke body includes counter limbs having axial width dimensions at pole surfaces corresponding to the limbs of the main yoke body as recited by claim 17.

As explained above, this feature is important for simplifying the yoke structure and thereby making it less expensive to manufacture and easier to install the windings.

Indeed, the Office Action does not allege that the JP2000-224829 reference teaches or suggests the counter-yoke body includes counter limbs having axial width dimensions at pole surfaces corresponding to the limbs of the main yoke body as recited by claim 17.

Appellants respectfully request reversal of this rejection.

c. Claims 15 and 16 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the JP2000-253640 reference in view of the Huth reference (EP 0915553)

The Office Action rejects claims 15 and 16 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the JP2000-253640 reference in view of the Huth reference (EP 0915553). Appellant respectfully traverses this rejection.

None of the applied references teaches or suggests the features of the claimed invention including a pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width dimension and the pole surface spacing dimension as recited by independent claim 14. This feature is important for simplifying the yoke structure and thereby making it less expensive to manufacture and easier to install the windings.

As explained above, the JP2000-253640 reference does not teach or suggest these features.

The Huth reference does not remedy the deficiencies of the JP2000-253640 reference.

The Office Action appears to suggest that it would have been obvious to one of ordinary skill in the art to provide the pole shoes that are disclosed by the Huth reference to the limbs of the JP2000-253640 reference. The Office Action makes the conclusory statement that such would have been obvious because "these two pole structures were art- recognized equivalents." Appellant respectfully submits that such a conclusory statement is insufficient to provide a prima facie case for obviousness because the Office Action fails to provide an adequate rationale for combining the prior art as required by KSR International v. Teleflex Inc. 82 U.S.P.Q. 2d 1385 (2007).

"[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rationale

underpinning to support the legal conclusion of obviousness." (In re Kahn, 441 F.3d 977, 988 (CA Fed. 2006) cited with approval in KSR).

The Office Action simply provides absolutely no hint of any articulated reasoning with any rationale underpinning to support a legal conclusion of obviousness. As such, the Office Action fails to present a prima facie case for obviousness.

The Office Action has provided no articulated reasoning to combine the teachings and suggestions of the Huth reference with the JP2000-253640 reference to arrive at the claimed invention, except from using Appellant's invention as a template through hindsight reconstruction of Appellant's claims.

Moreover, Appellant respectfully submits that one of ordinary skill in the art would not have combined the teachings of the Huth reference with the JP2000-253640 reference. The references are directed to completely different and unrelated problems.

One of ordinary skill in the art who was concerned with the problems with which the Huth reference is concerned with solving would not have referred to the JP2000- 253640 reference, and vice-versa, because the JP2000-253640 reference is concerned with completely different and unrelated problems. Thus, these references would not have been combined.

Appellants respectfully request reversal of this rejection.

d. Claims 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the JP2000-253640 reference in view of the McGill et al. reference (US 2003/017384)

The Office Action rejects claim 21 under 35 U.S.C. § 103(a) as allegedly being unpatentable over the JP2000-253640 reference in view of the McGill et al. reference. Appellant respectfully traverses this rejection.

None of the applied references teaches or suggests the features of the claimed invention including a pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width dimension and the pole surface spacing dimension as recited by independent claim 14. This feature is important for simplifying the yoke structure and thereby making it less expensive to manufacture and easier to install the windings.

As explained above, the JP2000-253640 reference does not teach or suggest these features.

The McGill et al. reference does not remedy the deficiencies of the JP2000- 253640 reference.

The Office Action appears to suggest that it would have been obvious to one of ordinary skill in the art to provide the pole shoes that are disclosed by the McGill et al.

reference to the limbs of the JP2000-253640 reference. The Office Action makes the conclusory statement that such would have been obvious because "these two pole structures were art-recognized equivalents." Appellant respectfully submits that such a conclusory statement is insufficient to provide a prima facie case for obviousness because the Office Action fails to provide an adequate rationale for combining the prior art as required by KSR International v. Teleflex Inc. 82 U.S.P.Q. 2d 1385 (2007).

"[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness." (In re Kahn, 441 F.3d 977, 988 (CA Fed. 2006) cited with approval in KSR).

The Office Action simply provides absolutely no hint of any articulated reasoning with any rationale underpinning to support a legal conclusion of obviousness: As such, the Office Action fails to present a prima facie case for obviousness.

The Office Action has provided no articulated reasoning to combine the teachings and suggestions of the McGill et al. reference with the JP2000-253640 reference to arrive at the claimed invention, except from using Appellant's invention as a template through hindsight reconstruction of Appellant's claims.

Moreover, Appellant respectfully submits that one of ordinary skill in the art would not have combined the teachings of the McGill et al. reference with the JP2000- 253640 reference. The references are directed to completely different and unrelated problems.

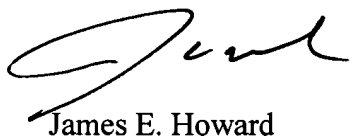
One of ordinary skill in the art who was concerned with the problems with which the McGill et al. reference is concerned with solving would not have referred to the JP2000-253640 reference, and vice-versa, because the JP2000-253640 reference is concerned with completely different and unrelated problems. Thus, these references would not have been combined.

Appellants respectfully request reversal of this rejection.

(8) CONCLUSION

In view of the foregoing discussion, Appellants respectfully request reversal of the Examiner's rejections.

Respectfully submitted,



James E. Howard
Registration No. 39,715
May 4, 2008

BSH Home Appliances Corporation
100 Bosch Blvd.
New Bern, NC 28562
Phone: 252-639-7644
Fax: 714-845-2807
james.howard@bshg.com

CLAIMS APPENDIX

1 – 13 (Cancelled)

14. (Rejected) A linear drive device comprising:

an excitation winding producing a variable magnetic field;

a magnetic-flux-guiding main yoke body accommodating the excitation winding and having multiple limbs including a central limb;

a winding-free counter-yoke body disposed opposite to the main yoke body; an axial gap formed between the main yoke body and the counter-yoke body;

an armature body provided with at least two permanent magnetic magnet parts arranged axially one behind the other and having opposite magnetization, each of the at least two magnet parts having a magnet axial extension dimension, the armature body being set in axially oscillating motion by the magnetic field of the excitation winding in the axial gap; and

each of the multiple limbs of the main yoke body having a pole surface facing the armature body and defining a pole surface width dimension extending across the axial width of the pole surface, the pole surface width dimension of each of the multiple limbs being substantially the same, each of the multiple limbs being spaced apart from one another axially by a pole surface spacing dimension, the magnet axial extension dimension of each magnet part being approximately equal to the sum of the pole surface width dimension and the pole surface spacing dimension.

15. (Rejected) The drive device according to claim 14, further comprising:

winding windows holding the excitation winding between the limbs and having a window axial extension dimension extending between the adjacent limbs; and

pole shoe bodies disposed on the pole surfaces of the limbs of the main yoke body and having a pole axial extension dimension being greater than the window axial extension dimension.

16. (Rejected) The drive device according to claim 15, wherein the pole shoe bodies are placed on the respective limbs.

17. (Rejected) The drive device according to claim 14, wherein the counter-yoke body includes counter limbs having axial width dimensions at pole surfaces corresponding to the limbs of the main yoke body.

18. (Rejected) The drive device according to claim 14, wherein the counter-yoke body is embodied as plate-shaped.

19. (Rejected) The drive device according to claim 14, wherein the pole surface width dimension of at least one pole surface is substantially the same as the stroke distance of the armature body during the oscillating movement.

20. (Rejected) The drive device according to claim 14, wherein the magnet parts are embodied as plate-shaped.

21. (Rejected) The drive device according to claim 14, wherein the armature body is rigidly connected to a pump piston of a compressor.

22-31. (Allowed)

EVIDENCE APPENDIX

None

RELATED APPEALS APPENDIX

None